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HOSPITALS IN THE PUBLIC HEALTH PANORAMA[1]

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The Western Hemisphere will face many grave responsibilities at the end of the war, but few will be more important than those concerned with public health. The new tasks that await us will require not only breadth of vision and technical skill but a social consciousness commensurate with the magnitude of health requirements in each country and throughout the world.

In discussing the future of public health, I think we would all agree with Sir Arthur MacNalty, formerly chief medical officer of the British Ministry of Health, that public health is "the science of preventive medicine in its broadest sense." If we would also agree that no sharp line can be drawn between prevention and cure, we must logically conclude that the panorama of public health presents an expanding universe in which are included all knowledge, skills, and activities that will conduce to the eradication of disease, the amelioration of suffering, and the preservation and promotion of health.

This does not mean that health officers would or should take over all these functions. They should, however, have a larger responsibility in pointing out the roads to health, and in clearing away such obstructions as economic barriers, ignorance, and official indifference which now all too often block the free flow of health services from those qualified to give them to those who need them. The health officer of the future must possess a clearer understanding of the social and economic factors affecting health; he should continue his professional training all through life in order to keep abreast of current scientific discoveries which may have a bearing on public health methods; and finally, in whatever capacity he serves, whether in a rural area or in a large city, whether as the head of a State or national health organization, he should vigorously promote the cause of health at all times for all people. However, enlarged social vision and greater technical

[1] Condensed from a paper presented at the First Regional Institute for Hospital Administrators, Mexico City, Mexico, January 28, 1944.

knowledge will be needed not only by the health officer of the future but by the practicing physician, the dentist, the nurse, the hospital administrator, the engineer, and all other health workers.

We in the United States are considering various ways in which to achieve a post-war reorientation and improvement of health activities. To do this will require the fullest cooperation of all groups concerned. Representatives of government, of the medical and allied professions, of health agencies, and of labor, management, and the public at large should come together for free and frank discussion of health needs and of the changes that will be necessary to meet them.

If health services, both preventive and curative, are to be distributed equitably to entire populations, there is need in each country for a comprehensive national health service organized in the public interest. There should be a central or Federal health agency responsible for all aspects of national health. This agency should be concerned with over-all planning, the coordination of health activities, the establishment of standards and broad policies, and the fostering of research. It should cooperate closely with the central health agencies of other nations in the interests of international health. Internally, it should provide technical assistance to smaller governmental units and should assume administrative responsibility for those functions which cannot be carried out by State and local health departments because of administrative difficulties or excessive costs. For the majority of health activities, experience has shown that local or regional rather than central administration is more satisfactory because of the benefits to be derived from local interest in planning, organizing, and carrying out programs.

The central health agency should assemble, analyze, and interpret statistical and other reports from State and local health agencies. It should conduct surveys in connection with health problems having more than local interest. It should provide the expert advice of engineers, architects, and hospital experts in working out national and regional plans for hospitals of various types and sizes. It should be on the alert for discoveries in clinical medicine, biochemistry, and physics, to the end that new knowledge may be made available for the benefit of the nation at large. I envisage the central health agency of the future as a great clearinghouse for health knowledge, both preventive and curative, national and international. In addition, it should engage in laboratory and clinical research on health problems of wide public interest, such as cancer, tuberculosis, mental diseases, dental caries, and upper respiratory infections. If, for instance, the incidence of dental caries could be cut in half, or even reduced by 30 or 40 percent, there would almost immediately be a great improvement in dental health, and the savings in expenditures for dental services would be a boon to the entire population. It seems not

unlikely that methods now being investigated could bring about such a reduction.

One great desideratum in public health at the present time is for more basic research into the causes, prevention, and cure of illness. It is possible that if central health agencies in many countries are charged by their governments with responsibility for research into the cause and prevention of cancer, mental disease, and the cardiovascular diseases, and if they are given the necessary funds and personnel to conduct such research, we may be in a position to report as much progress in the fight on these diseases by 1964 as we can now report in the fight on typhus, typhoid, and plague during the past 20 years.

Below the central or Federal level in the public health organization of the future, there will undoubtedly be a number of administrative levels—regional, State, health district, county, municipality, and small rural health unit. At each level there will need to be a reorganization into units of convenient administrative size.

The smallest administrative unit should have a health center, counterpart of the local elementary school, to house the health activities of that community. These centers would vary in size and in scope of services from place to place, depending on the social and economic characteristics of the locality, on the density of population, and on the nearness to general hospitals or polyclinic medical centers. A health center serving a remote rural community would probably have a health officer, a public health nurse, and such other staff members as were needed to handle matters of sanitation, inspection, vital statistics, and other traditional public health services. In addition, the health center of the future might contain one or two offices for the use of local physicians so that they would have access to the laboratory services which are now an absolute necessity in diagnosis and which the country doctor cannot afford to set up in his own home. The center might also include a few beds for maternity and emergency cases. Here, too, there might be a consultation room for visiting specialists from the large medical centers. If the community were too small to support or to need full-time special clinics, it might be possible to hold such clinics at reasonable intervals under the professional supervision of specialists from the larger official health departments. Mobile diagnostic equipment, such as X-ray machines, might be taken from State health departments to the small health centers for use in mass case-finding surveys.

In more densely populated communities, health centers might be established to serve larger groups of people. Thus, recent studies made by a committee of the American Public Health Association indicate that health districts of not less than 50,000 population might be established. In the United States 3,070 counties would be regrouped to form 1,127 local jurisdictions for health administration.

Wherever practicable, trading centers would serve as the nuclei for health districts organized to serve the population within a radius of 40 miles.

Without attempting to describe in greater detail the future administrative pattern and geographical distribution of health services, I think it is clear we must have better organization than we now have if we are to achieve a more even distribution of services.

When we come to the task of actually setting down on paper the master plans for national, regional, and local health activities, we begin to appreciate the role that hospitals are destined to play in the entire organizational scheme, for we must depend upon the hospitals not only for their present and enlarged professional services but also for their important role in education and research. The large teaching hospitals located in the great centers of population will occupy positions of primary importance. There is no more important task to be performed than that of training future health personnel. Teaching hospitals after this war will have an incomparable opportunity to help in the education of health workers.

Too long have doctors considered that the cure of the sick was their primary function; too long has the public thought of doctors as persons to be summoned only in the event of illness or accident. In the popular mind, and probably in the professional mind as well, hospitals have been thought of as the last resort for the patient at death's door, and in a large number of cases that has been the fact. The place of the general hospital in the public health services of the future will depend upon the type of training given in the teaching hospitals and in the medical schools.

There must unquestionably be a greater emphasis on research. Clinicians, teachers, and administrators should be ever on the alert to discover the medical student, the intern, or resident who shows an interest in, or ability for, research. The greatest encouragement should be given to such students. Financial assistance should be provided through scholarships, fellowships, and government subsidies. Recognition and education of a single Pasteur, Lister, or Curie might mean more for national and international health than the training of a thousand physicians to devote their lives to curing or trying to cure preventable illnesses.

The teaching hospital may also be expected to serve the region in which it is located by encouraging specialists on the staff to spend a certain number of days periodically in visiting the larger health centers in their region. Thus, the brain specialist at a teaching hospital in a city of one million population might periodically visit the main health centers in cities of 500,000 population. Such an arrangement would give the specialist an opportunity to see selected patients in cities of intermediate size, thus broadening his own ex-

perience, and at the same time affording the general practitioners in these cities the opportunity of discussing their more difficult cases with the visiting specialists. Once or twice a year institutes might be held under the joint auspices of the teaching hospitals and of local or district health centers.

When we turn from the teaching to the nonteaching general hospitals, we find the institutions which will share with local health departments many of the new responsibilities of the post-war era. Neither public health officials, hospital administrators, nor practicing physicians can turn deaf ears to popular demands for access to hospital and medical care, regardless of the ability of the individual to pay for the services. How these demands may best be met is not an easy matter to decide. It is not enough to provide government grants for medical care and hospitalization if there are not enough physicians or hospitals in the places where they are needed. It is not enough to build more hospitals if there are neither doctors, nurses, nor technicians to staff them and if there is no way to maintain the hospitals after they are built. Finally, it is not even enough to build, staff, and maintain a hospital unless that institution accomplishes something more than the daily care of the sick and injured. Unless the community hospital can point, over a period of years, to a reduction in the incidence of sickness and to an increase in the general health of the population, it will not have been fully effective.

The general hospital will unquestionably be expected to play a different role in community life and the same may be said of local health departments. Perhaps the happiest solution would be to bring the two institutions nearer together physically and let them constitute the community health center. General practitioners will perforce make greater use of institutional facilities whether these are located in a hospital or a health department. The average practitioner cannot afford to set up in his home the office equipment needed for modern diagnosis. Indeed, it would be a waste of time for a practicing physician to try to make the necessary laboratory tests even if he had the equipment at hand. More and more the physician is carrying on his profession in centrally located medical buildings, in voluntary group associations where several workers share equipment, office help, telephone service, and the like. There is much to commend the suggestion that physicians should go one step further and have their offices either in or near the health center.

In this connection, I should like to point out the wisdom of stimulating local, voluntary action. It may seem easier to force through sweeping reforms by Government fiat, but in so doing we may lose one of the forces most needed to bring about the desired reforms, namely, the spontaneous action of individuals and of groups. While

there is much indifference and lethargy to overcome, much can be accomplished through education stimulated and guided by public and voluntary health and welfare organizations. Usually, voluntary action does not go far enough and then it becomes necessary for the State to step in and complete the job. Perhaps in no other field of human endeavor is it more important to have the voluntary action of individuals singly and collectively. Neither physicians, health officers, nor nurses can be especially effective in promoting health if they count on what they can do in a half-hour visit at office, clinic, or home. Physical fitness is not produced when an acute illness is cured, nor is chronic disease abated by a 2-week stay in a hospital. While admittedly we must do all we can to cure acute illness and alleviate chronic disease, we must at the same time realize that it is within the bounds of possibility so to educate the next generation that much of this burden of illness will not develop.

The newer health education will call for participation by everyone in the community and for that reason I should like to see the retention, and stimulation, of voluntary action. It is well for people to desire to live wholesomely. It is well for them to know how to eat for health and to enjoy doing so. It is well for them to avoid living habits that predispose to painful diseases. Health education in the schools can play an extremely important part in this conditioning of children. Here again hospitals should help. Clinicians and surgeons, technicians, nurses, and administrators might come to recognize that part of their civic duty lay in devoting a little time each week to the children in the schools.

Health education should penetrate into places of work, and there again hospital staffs could be of inestimable service in cooperating with industrial hygiene divisions of health departments. Education of workers should go far beyond questions of industrial disease and accidents, for health cannot be divided into compartments by factory walls nor does it lend itself to the artificialities of statutory limitations. Adult health education of workers at their places of work through the combined efforts of health officials and hospital administrators should be part of every community health program.

The health program of the future will unquestionably be directed toward preventive activities on all fronts. It will require more trained personnel, more and different facilities. This will mean more money.

Questions of finance loom large whenever health programs are outlined. The practical politician, the seasoned health official, the harassed hospital administrator, and the doctor who cannot collect his bills will probably all agree that health services for everyone would be desirable. At the same time they will point out that the provision of such services is expensive and that many people simply do not have the means to pay for them. The necessity for government aid is

apparent, but how such aid is to be given is not clear. Health services are unique in that they are the only services needed by every individual from "womb to tomb." However they are provided, whoever pays for them, they are admitted requisites in modern society.

It is impossible to view the panorama of public health services the world over without concluding that the financing of such services will probably be accepted increasingly as a public responsibility. Each country will have to evolve its own financial scheme. Many countries have developed sickness insurance plans to provide limited medical care and hospitalization to certain classes of workers. Other countries, like the Soviet Union, Ireland, and New Zealand, have medical services which are provided to everyone through the public health agencies. Poland and China are planning such an approach after the war, and the Joint Parliamentary Committee on Social Security in Australia has proposed a comprehensive health service for the entire population to be financed from general revenues by an income tax.

Whatever we may do, it is of the utmost importance to preserve the best features of our present system of medical practice lest, in the zeal to reform, we ruthlessly destroy the good along with the bad. Progress must be made by building carefully on the foundations already developed.

We have conducted surveys throughout the United States to ascertain what would have to be done after the war to provide a Nation-wide physical foundation for healthful living. A sanitary environment in cities, towns, and rural areas is the first requisite for a national health program. Many large cities are still not adequately provided with modern sanitation facilities. Preliminary estimates indicate that it would require an expenditure of about 300 million dollars a year for 10 years to meet these essential needs. Additional public water supplies, sewer systems, plants for the treatment of industrial wastes, and incinerators or other installations for garbage disposal are required for cities, while uncontaminated water supplies as well as sanitary privies are needed in rural areas. An expenditure of 3 billion dollars for sanitation would result in a further reduction in the incidence of water-borne and milk-borne diseases and a lessening of the burden on physicians and hospitals for the care of persons suffering from diseases which might long since have been wiped out had they been attacked with sufficient vigor. In addition, new precautions must be taken to guard our people from the spread of malaria and from outbreaks of typhus and plague. An expenditure of over 100 million dollars annually is estimated as necessary to carry on the several control programs to fight these scourges, which, in spite of all our knowledge, may seriously threaten the Western Hemisphere at war's end.

The second great need in the United States is for hospitals, health centers, and buildings to house local health departments. Here in the city which boasts the oldest hospital in the Americas and which is developing such a splendid group of general and special hospitals, it is hardly necessary to point out how essential such institutions are in implementing a health program designed to prevent as well as cure illness. In spite of the fact that there are over a million beds in more than 6,000 hospitals in our country, the distribution of beds in rural areas is still not satisfactory, due in large measure to economic conditions. Our present estimates indicate that if we are to build the numerous small health centers required in sparsely settled areas and are to construct the larger hospitals that should serve State and regional needs and, at the same time, are to replace obsolete structures, we shall need to spend some 200 million dollars a year for 10 years.

While many of our cities and wealthier States are financially able to build the health facilities they need, there are many communities which cannot do so. Those are the communities which have had long-standing shortages of all types of health and welfare services. They will require government aid both for construction and for maintenance of facilities.

If hospitals and health centers are built after the war with the aid of Federal funds, I hope it will be possible in most instances to staff and operate them with private practitioners of medicine in accordance with agreements to be worked out between them and the Federal Government. I believe that a very large proportion of our lay population as well as the majority of medical practitioners would prefer to see the continuation of the private practice of medicine wherever possible. This does not preclude the use of salaried physicians in areas where private practice is so unremunerative that no physician could be induced to settle. Nor does it preclude the employment of physicians on a part-time basis for a variety of services that cannot be paid for advantageously in any other way. In this connection, hospital leaders will probably have more to say about future methods of payment for medical services than any other group of health workers, for it will devolve upon them to work out some scheme satisfactory to these institutions, the professions, and the public.

In the United States, after we provide the physical facilities to serve as foci for the more equitable and adequate distribution of health services, we shall need to evolve methods for breaking down the economic barriers which now prevent low-income groups from having all the health services they need. There has been considerable agitation for the expansion of voluntary insurance schemes to aid in meeting some of the financial burdens imposed by catastrophic illness. Ten percent of our population is already covered by such insurance, and proposals have been made for the extension of these plans to a much

larger proportion of the people. While voluntary insurance furnishes an answer to only part of the problem in health economics, the Blue Cross plans and many schemes sponsored by labor and management, notably the Kaiser plan, are making significant contributions in this direction. It is too early to make any final pronouncement about the efficacy of voluntary insurance as it is being developed in the United States, but the movement has gained considerable headway and is worth encouraging.

But after all voluntary efforts have been made, even under the most favorable arrangements, the major problems of health will still remain. All levels of government, Federal, State, and local, in the United States will probably have to work together to finance those health activities that cannot be paid for by the localities or groups of people which are the direct beneficiaries. Thus, if a community is too poor to build a health center or pay for a health officer or physician, the State or the Federal Government, singly or jointly, may aid the community. Similarly, government funds will probably be used more generally to provide medical and hospital care for low-income groups, including recipients of public assistance and those with incomes so low that they cannot afford to purchase adequate medical care at present rates. An extension of public health services to include tax-supported medical care and hospitalization for low-income groups under arrangements to be worked out by representatives of hospitals, the professions, and the public might help to solve one of our most pressing health needs. Salaried physicians at health centers and hospitals might provide for this group which cannot pay for needed services and which the medical profession should not be expected to serve gratis as it now so frequently does.

In our country, we are hoping to raise the income level of the population by full employment and increased wages. But even when these desirable social reforms shall have been brought about, there will still remain persons who cannot work because of old age or physical or mental disability. Again I envisage the time when there will be available to the physically and mentally disabled the rehabilitation services which are needed to restore them to useful and happy ways of life. Greater emphasis on tax-supported preventive services for handicapped persons would reduce the number of those who would otherwise become permanent public charges. Ultimately, through the expansion of public health services to the entire population, the incidence of chronic disease should be reduced to a minimum. It is this load of chronic illness that bears down heavily in every country. It cannot be borne by insurance schemes and therefore tends to be neglected unless governmental agencies assume a large measure of responsibility for both prevention and cure.

In the United States, Federal aid would be desirable to provide refresher courses and postgraduate training for physicians returning from military duty. A continuing program of medical education or at least one lasting during the period of reconstruction would also seem desirable. Rather generous proposals along these lines are now being considered by the Congress. Perhaps satisfactory arrangements could be worked out for using the personnel thus aided to staff such health centers and general hospitals as may be constructed or maintained by government. A year or two of service in these hospitals and health centers would enlarge the experience and social viewpoint of the next generation of physicians and would at the same time tide them over a difficult period until they could establish themselves in private practice —if that were their ultimate goal. There are great opportunities for returning physicians, dentists, nurses, and technicians if we but plan wisely for their continuing education and for their distribution in new facilities properly equipped and maintained.

Finally, government funds should be used to insure educational programs which would encourage men and women of promise to reenter research on their return from the armed services. We spend pitifully small amounts on research, but I am hopeful that the impetus which has been given to scientific investigation under the pressure of war will carry over into peacetime and that we shall have institutes for the study of nutrition, mental disease, cancer, dental defects, tuberculosis, cardiovascular diseases, and other conditions which are responsible for the greater part of our present load of sickness and for four-fifths of the general death rate.

The distant view is obscured by clouds of war. Yet there is every reason to believe that an era of great achievement lies ahead. The New World has been spared the destruction that has laid much of the Old World in ruins. It is for us to point the way in the standards we set, in the type of physician we train, in the health programs we develop. We can accept half measures of reform, or we can assume the leadership in the war against disease. We can dissipate our energies in controversy over the vested interests of government, organized medicine, and voluntary hospitals, or we can come together as specialists in health problems to work together for the common good and for the cause of national and international health. The choice is ours!

EXPERIMENTAL LEPTOSPIROSIS IN HAMSTERS (*CRICETUS AURATUS*) [1]

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A practical aspect of the study of leptospirosis involves the choice of suitable susceptible laboratory animals. In the instance of

[1] From the Division of Infectious Diseases, National Institute of Health.

Leptospira icterohaemorrhagiae numerous species of host are available, but no fully susceptible host is readily accessible for studies of *L. canicola*. The susceptibility of hamsters (*Cricetus auratus*) to infection with these spirochetes will be discussed in this paper.

Meyer, Stewart-Anderson, and Eddie (*1*) observed that very young guinea pigs are susceptible to infections with *L. canicola*, the features of the disease produced being a febrile reaction accompanied by weight loss. Death was rarely noted, but continued passage in these animals tended to increase the relative number of deaths. Walch-Sorgdrager (*2*) also pointed out that the reaction in guinea pigs due to infections with *L. canicola* was much milder than that due to infections with *L. icterohaemorrhagiae*. Hamsters were first investigated for their susceptibility to leptospirae by Morton (*3*) who discovered that *L. icterohaemorrhagiae* killed 3- to 5-week-old Syrian hamsters in 5 to 8 days with typical icterus. Using only a single strain of *L. canicola* he found that hamsters survived the injection of this agent although organisms could be detected in the blood stream. A discussion of the animals previously known to be susceptible to *L. icterohaemorrhagiae* can be found in another paper (*4*). Icterus, hemorrhages, and death are the common features of the disease produced in susceptible animals following inoculation with this organism.

MATERIAL AND METHODS

Hamsters (*C. auratus*) of varying ages were selected from the stock raised at the National Institute of Health. The ages ranged from 14 to 250 days. Swiss mice 3 to 4 weeks old and guinea pigs weighing about 150 gm. were also used.

Infective material consisted of organisms grown on Verwoort's medium at room temperature or at 32° C. or of 10 percent emulsions of liver and kidneys of animals infected with leptospirae. All injections were made by the intraperitoneal route with doses of 0.3 to 1.0 cc. being given. The strains of *L. icterohaemorrhagiae* employed had all been isolated from wild rats (*Rattus norvegicus*) in Washington, D. C., or Richmond, Va. They produced jaundice, hemorrhages, and death in nearly all young mice and guinea pigs into which they were injected. WRZ–1 had been carried in mice for 39 transfers during the period from July 22, 1941, to March 21, 1942, before hamsters were inoculated with it. WR–1 had been carried 23 generations in mice from December 19, 1941, to March 25, 1942, while strain 18 had been through 18 passages in mice during an interval of 2 months. Strains 301 and 626 had been carried through 76 and 63 generations, respectively, in mice before use in these experiments.

Infective *L. canicola* material consisted of two strains. The first of these, No. 189, was isolated by Dr. G. Brigham and had been

carried in guinea pigs for 143 generations before it was received at the National Institute of Health, and for 52 further passages before hamsters were injected with it. Strain A was obtained from the laboratories of the Army Veterinary School where the problem of leptospirosis is being studied. It was isolated from a spaniel which was apparently the source of infection for a human case of canicola fever occurring in Washington, D. C. This organism failed to produce infection in white mice, induced fever and weight loss in guinea pigs, and agglutinated specifically with anticanicola immune serum.

Two immune serums were used. Both were prepared in rabbits. The anticanicola immune serum agglutinated *L. canicola* to a titre of 1:100,000 and *L. icterohaemorrhagiae* to a titre of 1:100 while the anti-icterohaemorrhagiae serum agglutinated the homologous organism to a titre of 1:1,000,000 and the heterologous one to a titre of 1:100,000.

EXPERIMENTAL

Susceptibility of hamsters to infections with L. canicola.—A 10 percent emulsion of liver and kidneys of a guinea pig inoculated with the 194th passage of strain 189 in these animals was prepared. Leptospirae were observed in this suspension. Doses of 0.6 cc. were given intraperitoneally to each of 2 hamsters which were 3 weeks old. Both animals died in 4 days. At autopsy hemorrhages were found in the lungs and examination of peritoneal fluid under dark-field illumination showed many active leptospirae. A 10 percent saline emulsion of liver and kidneys of one of these animals was used to propagate the passage in hamsters. The series was passed through 8 generations of hamsters varying in age from 2 to 7 weeks. No survivors were noted in the 16 used. The survival periods from date of inoculation to date of death ranged from 4 to 10 days and averaged 6 days.

A 5-day culture of strain A grown on Verwoort's medium was used to inoculate 6 guinea pigs weighing about 150 gm., 10 mice 3 weeks old, and 5 hamsters 4 weeks old. All were inoculated intraperitoneally with 0.3 cc. of this culture. No deaths occurred among the mice or guinea pigs but all the hamsters died on the fifth and sixth days following injection. Tissues of these animals were shown to contain leptospirae and were used to infect 5 more hamsters which died 4 days later. Similar results were obtained upon repetition of this experiment.

Susceptibility of hamsters to infection with L. icterohaemorrhagiae.—A 10 percent emulsion of liver and kidneys of a mouse dying in the 63rd passage of strain 626 was used to initiate infection in 4 hamsters of undetermined age. These were injected intraperitoneally with 0.6 cc. of the tissue emulsion and all died 4 days after inoculation. At autopsy leptospirae were detected in the tissue by dark-field illumi-

nation. The tissues were icteric and hemorrhages were present in the abdominal muscles, lungs, and kidneys. An emulsion of pooled tissues from these animals was given intraperitoneally to 4 guinea pigs which developed fever, jaundice, and hemorrhages into various tissues and died 5 to 7 days after injection. Ten percent emulsions of liver and kidney from each hamster were prepared and 0.6 cc. of each was given to lots of 5 mice and 2 hamsters. The 20 mice died with typical findings of leptospirosis icterohaemorrhagica and all hamsters were dead on the fourth day following inoculation. It was thus demonstrated that hamsters were susceptible to infection with *L. icterohaemorrhagiae* and that material taken from them was capable of infecting other hamsters as well as producing typical signs and lesions of leptospirosis icterohaemorrhagica in mice and guinea pigs. For the next 5 passages groups of mice were injected with the same material as was given to each succeeding lot of hamsters. In each passage the material induced jaundice, hemorrhages, and death in both species of host. Thirteen further passages were made in hamsters before the work was discontinued. A total of 53 hamsters were used and all died as a result of infection. The ages of the hamsters varied from 3 weeks to full maturity. Death occurred in from 3 to 13 days after inoculation, with an average of 4.9 days.

Four other strains of *L. icterohaemorrhagiae* were also used for serial passage in hamsters. The results are shown in table 1.

TABLE 1.—*The number of passages, number of hamsters, age range, and survival period among 153 hamsters dying after inoculation of* L. icterohaemorrhagiae

Strain	Number of passages	Number of hamsters used	Age range of hamsters used	Range of survival period (days)	Average survival period (days)
626	19	53	3 weeks–adult	3–13	4.9
WRZ–1	13	26	3–8 weeks	3–10	5.0
301	19	38	do	3–10	5.2
18	5	10	3–6 weeks	4–10	5.8
WR–1	13	26	3–8 weeks	2–13	5.8

STUDIES OF IMMUNE SERUM UPON COURSE OF LEPTOSPIROSIS IN HAMSTERS

In view of the fact that hamsters are susceptible to infections with both *L. icterohaemorrhagiae* and *L. canicola*, tests were made to determine the effect of specific antiserums upon the course of infection in these animals. The agents used to infect the animals were strain 626 and strain A. Cultures of these organisms in Verwoort's medium were diluted with equal parts of normal rabbit serum or 1:5 dilutions of specific antiserum, held at room temperature for 2 hours, and administered intraperitoneally in 0.6 cc. amounts to the desired number of animals. Twenty hamsters were included in each age group in-

jected and 4 age groups were studied (19, 43, 50, and 250 days old). Five animals in each age group were given strain A (*L. canicola*) or strain 626 (*L. icterohaemorrhagiae*) mixed either with normal serum or specific immune serum. The results are shown in table 2. It is apparent that hamsters within the age range used are uniformly susceptible to infections with *L. canicola* and *L. icterohaemorrhagiae* and that specific immune serum administered simultaneously with the infectious agent fully controlled the cause of infection.

TABLE 2.—*Effect of specific immune rabbit serum administered simultaneously with an infective dose of* L. canicola (*strain A*) *or* L. icterohaemorrhagiae (*strain 626*) *in hamsters*

Age of hamsters (days)	Infected with *L. canicola*				Infected with *L. icterohaemorrhagiae*			
	Serum given		No serum given		Serum given		No serum given	
	Number inoculated	Number of deaths	Number inoculated	Number of deaths	Number inoculated	Number of deaths	Number inoculated	Number of deaths
19	5	0	5	0	5	0	5	5
43	5	0	5	5	5	0	5	5
50	5	0	5	5	5	0	5	5
250	5	0	5	5	5	0	5	4

An experiment was performed in order to determine the value of specific immune serum in the treatment of *L. canicola* infections in hamsters. The same infective agent and immune serum used in the foregoing experiment were again employed. Twenty-seven hamsters 19 days old were inoculated intraperitoneally with 0.3 cc. of a culture of strain A grown on Verwoort's medium. On the following day 5 hamsters were given 0.5 cc. of a 1:5 dilution of anticanicola rabbit immune serum intraperitoneally and 7 were given a 1:5 dilution of normal rabbit serum by the same route. Lots of 5 hamsters each were treated with immune serum in a like manner on the second, third, and fourth days following inoculation. The results are shown in table 3 and demonstrate that specific immune serum is of value in the treatment of *L. canicola* infections in hamsters for at least 3 days after infection has been induced.

TABLE 3.—*Effect of specific immune rabbit serum and normal rabbit serum administered at varying intervals after an infective dose of* L. canicola *in 19-day-old hamsters*

Type of serum	Dose (cc.) (diluted 1:5)	Interval (days between infecting dose and administration of serum)	Number of hamsters treated	Number of hamsters surviving	Interval (days) between infecting dose and death
Normal rabbit serum	0.5	1	7	0	5-6
Immune rabbit serum	.5	1	5	5	----
Do	.5	2	5	5	----
Do	.5	3	5	5	----
Do	.5	4	5	1	5

DISCUSSION

The susceptibility of hamsters to both *L. icterohaemorrhagiae* and *L. canicola* has been demonstrated. Their addition to the group of animals already known to be liable to infection with leptospirae should be of value in the isolation and identification of leptospirae found in man and certain animals. This is especially true in the instance of *L. canicola* infections for no other convenient animal has been shown to develop lesions or to succumb readily when infected with this organism. With a more sensitive animal at hand it may be possible to isolate the organism with greater frequency than was possible when attempts at isolation had to be made in guinea pigs whose response to these organisms is not well defined. Identification of leptospirae can also be made on the basis of the variation in reactions of different hosts to *L. canicola* and *L. icterohaemorrhagiae*. The latter organism causes jaundice, hemorrhage, and death in hamsters, young mice, and small guinea pigs while the former does not produce symptoms in mice, causes weight loss, a febrile reaction, and infrequently death in guinea pigs and causes hemorrhages and death in hamsters.

SUMMARY

Hamsters (*Cricetus auratus*) are susceptible to infections with both *L. canicola* and *L. icterohaemorrhagiae*.

Specific rabbit immune serum protects hamsters against infections with either organism and anticanicola serum serves as a therapeutic agent if administered early in the course of illness to hamsters exposed to *L. canicola*.

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TYPHOID EPIDEMIC IN INDIANA DUE TO EATING GREEN CHEESE MADE FROM UNPASTEURIZED MILK

According to Dr. Thurman B. Rice,[1] the typhoid fever epidemic in Indiana early this year is the worst that the State has experienced in many years. Up to March 15, 1944, there had been 225 proved cases and 12 deaths officially reported; and although the source of the infection has been discovered and eliminated, further secondary cases and possibly deaths may be expected.

The report by Dr. Rice sets forth some unusual obstacles sur-

[1] Monthly Bulletin, Indiana State Board of Health, February 1944.

mounted by the epidemiological investigation leading to the final determination of the source of the infection and of the method of spread. From the beginning, the epidemic presented serious technical difficulties for the reason that the cases were spread over 18 counties in the northern part of the State, and involved other peculiarities. Early in the investigation, however, it was hypothecated that the epidemic was due to some food produced in the central area and distributed over that area to dealers by automobile delivery, as the cases followed closely a particular Federal highway. The hypothesis was proved to be correct, and the epidemiological findings may be summarized as follows: Sometime during December 1943 unpasteurized milk was used by a plant manufacturing cheese. The typhoid organism was present in this milk, probably having come from a farmer or a dairyman who was a carrier. The organisms then grew in the manufactured product and became virulent. If the cheese had been allowed to age, as is usually the case, the organism would probably have been killed after a few weeks, but the cheese was sold while quite green and still infectious.

When the cheese was shown to be the source of the infection, the product was taken off the market, but the name of the company involved was not disclosed, inasmuch as that company was no longer manufacturing cheese, having been succeeded by another firm. Later, however, in view of the fact that people frequently keep cheese in the icebox for some time, it was found advisable to identify the company.

Dr. Rice states: "We are proud that we were able to find the source and that we can tell the people there will be no repetition from this source at least. The public should be warned, however, that there are many sanitary short cuts being taken now due primarily to the fact that we have labor shortages and shortages of critical materials. The public would do well to lean backward in insisting upon sanitation. Typhoid fever can easily come back and take up its program where it was compelled to leave off for the most part some years ago."

DEATHS DURING WEEK ENDED APRIL 8, 1944

[From the Weekly Mortality Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended Apr. 8, 1944	Corresponding week, 1943
Data for 92 large cities of the United States:		
Total deaths	9,268	9,650
Average for 3 prior years	9,019	
Total deaths, first 14 weeks of year	141,181	141,790
Deaths under 1 year of age	616	647
Average for 3 prior years	556	
Deaths under 1 year of age, first 14 weeks of year	8,801	9,964
Data from industrial insurance companies:		
Policies in force	66,400,833	65,479,985
Number of death claims	12,472	13,330
Death claims per 1,000 policies in force, annual rate	9.8	10.6
Death claims per 1,000 policies, first 14 weeks of year, annual rate	11.2	10.7

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

REPORTS FROM STATES FOR WEEK ENDED APRIL 15, 1944

Summary

For the fourth successive week the incidence of meningococcus meningitis for the country as a whole declined. A total of 466 cases was reported, as compared with 499 last week, 605 for the corresponding week last year, and a 5-year (1939–43) median of 49. Increases were reported in only 3 of the 9 geographic divisions—the East North Central, the East South Central, and the Pacific. Nine States reporting 18 or more cases each for the week (last week's figures in parentheses) are as follows: *Increases*—Illinois 42 (30), Michigan 35 (28), Tennessee 25 (12), California 40 (29); *decreases*—New York 40 (53), New Jersey 18 (22), Pennsylvania 33 (38), Ohio 22 (24), Missouri 19 (26). The cumulative total for the year to date is 8,143 cases, as compared with 7,052 for the same period last year and a 5-year median of 766.

A slight increase occurred in the incidence of measles, and a slight decrease in that of scarlet fever: 30,759 cases of measles and 7,238 of scarlet fever were reported, as compared with 5-year medians of 25,994 and 4,409, respectively. The cumulative total for measles to date, 367,638 cases, has been exceeded only once since 1938, which was in 1941, when the figure for the corresponding period was 437,994. The cumulative total for scarlet fever is 91,350 and is higher than that for any other year since 1937, when 103,233 cases were reported for the corresponding period.

Current reports for the week for diphtheria, influenza, smallpox, typhoid fever, and whooping cough are below the corresponding 5-year medians, as are also the cumulative figures for all of these diseases except influenza. A total of 20 cases of poliomyelitis was reported, as compared with 16 last week and a 5-year median of 18.

Deaths registered in 92 large cities of the United States for the week totaled 9,558, as compared with 9,268 last week and a 3-year (1941-43) average of 9,216. The total to date this year is 150,771, as compared with 151,699 for the same period last year.

Telegraphic morbidity reports from State health officers for the week ended April 15, 1944, and comparison with corresponding week of 1943 and 5-year median

In these tables a zero indicates a definite report, while leaders imply that, although none was reported, cases may have occurred.

Division and State	Diphtheria			Influenza			Measles			Meningitis, meningococcus		
	Week ended—		Median 1939–43	Week ended—		Median 1939–43	Week ended—		Median 1939–43	Week ended—		Median 1939–43
	Apr. 15, 1944	Apr. 17, 1943		Apr. 15, 1944	Apr. 17, 1943		Apr. 15, 1944	Apr. 17, 1943		Apr. 15, 1944	Apr. 17, 1943	
NEW ENGLAND												
Maine	0	0	0	2	2	2	317	12	56	9	5	1
New Hampshire	1	0	0	—	—	—	8	27	34	2	2	0
Vermont	0	0	0	—	—	—	156	279	48	0	0	0
Massachusetts	8	3	3	—	—	—	1,013	1,834	1,032	5	40	2
Rhode Island	1	0	0	26	1	—	195	14	51	4	8	0
Connecticut	0	0	0	3	3	3	612	430	430	7	17	1
MIDDLE ATLANTIC												
New York	7	36	19	[1] 2	[1] 17	[1] 17	2,317	2,903	1,839	40	69	7
New Jersey	3	8	5	7	19	10	1,831	1,937	829	18	23	2
Pennsylvania	10	12	18	2	2	—	898	2,295	1,264	33	43	9
EAST NORTH CENTRAL												
Ohio	2	13	11	29	14	14	1,183	1,196	538	22	18	0
Indiana	2	3	5	7	66	24	224	616	143	8	16	1
Illinois	17	28	17	92	30	30	1,281	1,545	665	42	13	1
Michigan [2]	6	8	8	1	11	11	812	1,616	464	35	17	3
Wisconsin	4	3	1	37	34	89	2,758	2,277	953	6	4	1
WEST NORTH CENTRAL												
Minnesota	0	3	2	3	2	2	1,116	153	178	8	2	0
Iowa	8	3	7	38	—	9	204	301	309	2	12	1
Missouri	3	3	3	1	3	3	458	392	274	19	36	3
North Dakota	1	0	1	20	4	7	81	94	26	0	0	0
South Dakota	2	1	2	—	—	—	40	125	17	2	0	0
Nebraska	0	1	1	1	2	2	166	311	67	0	1	0
Kansas	2	5	4	1	5	6	689	623	597	3	5	1
SOUTH ATLANTIC												
Delaware	1	0	0	—	—	—	12	95	13	4	6	0
Maryland [2]	5	0	1	10	6	11	869	168	215	12	16	3
District of Columbia	0	0	2	—	1	1	195	83	83	2	2	0
Virginia	4	3	9	274	277	313	1,094	488	486	9	27	2
West Virginia	1	5	5	2	33	35	583	116	116	6	5	2
North Carolina	10	4	11	3	2	21	1,486	173	538	9	26	1
South Carolina	3	4	8	219	630	442	304	251	211	1	18	0
Georgia	1	3	7	43	80	92	299	406	203	5	12	1
Florida	1	4	4	79	16	9	326	52	127	3	19	0
EAST SOUTH CENTRAL												
Kentucky	2	5	4	4	6	6	81	361	126	10	14	0
Tennessee	3	5	4	43	78	87	293	360	145	25	10	1
Alabama	8	5	8	87	108	136	430	243	144	13	6	4
Mississippi [2]	2	7	5	—	—	—	—	—	—	12	14	2
WEST SOUTH CENTRAL												
Arkansas	1	2	4	35	28	99	437	193	171	[3] 3	[3] 1	1
Louisiana	2	9	9	7	16	20	163	84	167	8	2	1
Oklahoma	3	3	6	76	105	137	304	51	136	5	4	1
Texas	23	29	28	583	1,378	933	3,401	1,297	1,297	12	13	2
MOUNTAIN												
Montana	2	1	1	5	—	3	124	197	106	1	0	0
Idaho	0	0	0	—	2	2	78	67	67	1	5	0
Wyoming	0	0	0	—	20	—	80	126	79	3	1	0
Colorado	4	12	12	31	25	25	225	752	375	6	4	1
New Mexico	0	0	1	2	2	6	175	22	29	2	1	1
Arizona	2	1	1	61	108	101	348	77	53	3	6	0
Utah [2]	0	0	0	22	—	6	15	207	207	2	0	0
Nevada	0	0	0	—	6	—	16	36	0	1	1	0
PACIFIC												
Washington	5	4	0	4	3	3	133	716	716	3	12	0
Oregon	10	3	3	26	11	11	134	357	354	0	11	0
California	22	5	13	29	71	186	2,795	1,203	1,203	40	38	1
Total	192	244	244	1,917	3,227	3,111	30,759	27,161	25,994	[3] 466	[3] 605	49
15 weeks	3,588	4,142	4,486	324,632	63,965	129,247	367,638	262,946	254,951	8,143	7,052	766

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended April 15, 1944, and comparison with corresponding week of 1943 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever [4]		
	Week ended—		Median 1939–43	Week ended—		Median 1939–43	Week ended—		Median 1939–43	Week ended—		Median 1939–43
	Apr. 15, 1944	Apr. 17, 1943		Apr. 15, 1944	Apr. 17, 1943		Apr. 15, 1944	Apr. 17, 1943		Apr. 15, 1944	Apr. 17, 1943	
NEW ENGLAND												
Maine	0	0	0	59	14	14	0	0	0	2	0	1
New Hampshire	0	0	0	4	8	7	0	0	0	0	1	0
Vermont	0	0	0	11	4	5	0	0	0	0	0	0
Massachusetts	0	1	0	450	660	206	0	0	0	0	2	1
Rhode Island	0	0	0	15	24	12	0	0	0	0	0	0
Connecticut	0	0	0	106	114	97	0	0	0	0	0	2
MIDDLE ATLANTIC												
New York	2	0	1	535	635	635	0	0	0	4	0	5
New Jersey	0	1	0	401	125	214	0	0	0	0	3	3
Pennsylvania	2	1	0	710	376	376	0	0	0	5	6	6
EAST NORTH CENTRAL												
Ohio	0	0	0	609	273	310	1	4	1	1	2	2
Indiana	0	0	0	177	122	137	0	3	1	2	0	1
Illinois	1	0	0	519	201	426	1	2	2	6	4	3
Michigan [3]	1	0	0	352	108	306	0	0	0	3	1	1
Wisconsin	0	0	0	373	377	148	0	1	1	0	0	1
WEST NORTH CENTRAL												
Minnesota	1	1	0	182	71	52	0	0	0	0	0	0
Iowa	0	0	0	317	57	57	0	1	3	0	0	1
Missouri	0	2	0	197	152	109	0	2	3	0	0	1
North Dakota	0	0	0	40	6	7	0	0	0	0	1	1
South Dakota	0	0	0	35	19	19	0	0	0	0	0	0
Nebraska	0	0	0	26	117	27	0	0	0	0	0	0
Kansas	0	0	0	97	56	56	0	0	0	0	1	1
SOUTH ATLANTIC												
Delaware	0	0	0	19	7	7	0	0	0	0	0	0
Maryland [3]	0	0	0	242	148	47	0	0	0	0	0	1
District of Columbia	0	0	0	135	16	18	0	0	0	0	1	1
Virginia	1	0	0	107	30	32	0	0	0	5	2	2
West Virginia	0	0	1	82	26	29	0	0	0	10	4	1
North Carolina	1	0	0	39	47	22	0	3	0	2	0	2
South Carolina	0	0	0	2	3	4	0	0	0	0	1	2
Georgia	0	0	0	29	10	14	0	0	0	4	1	2
Florida	0	0	0	10	8	5	0	0	0	0	1	2
EAST SOUTH CENTRAL												
Kentucky	0	1	1	96	38	79	1	0	0	1	5	5
Tennessee	0	0	1	116	38	66	0	0	1	1	1	1
Alabama	1	2	0	17	9	12	0	1	0	0	1	3
Mississippi [3]	0	1	0	16	10	7	0	0	0	0	2	1
WEST SOUTH CENTRAL												
Arkansas	0	0	0	6	7	6	0	3	3	1	0	1
Louisiana	0	0	0	8	5	7	2	0	0	4	5	5
Oklahoma	0	0	0	22	16	17	2	0	0	4	1	1
Texas	4	1	1	84	63	50	1	1	1	0	8	6
MOUNTAIN												
Montana	0	0	0	60	6	20	0	0	0	0	0	0
Idaho	0	0	0	34	42	6	0	1	1	0	0	0
Wyoming	0	0	0	22	54	12	0	0	0	0	0	0
Colorado	0	0	0	58	45	34	0	0	0	1	0	0
New Mexico	0	1	1	10	17	10	0	0	0	3	3	1
Arizona	0	1	0	23	11	6	2	0	0	2	0	0
Utah [3]	0	0	0	93	30	16	0	0	0	0	0	0
Nevada	0	0	0	3	4	4	0	0	0	0	0	0
PACIFIC												
Washington	1	0	0	320	44	39	0	0	0	0	0	1
Oregon	0	1	0	147	38	14	0	2	2	1	1	1
California	5	5	2	223	192	129	0	0	0	5	1	3
Total	20	19	18	7,238	4,483	4,409	10	24	31	67	59	83
15 weeks	331	378	371	91,350	59,767	59,767	184	395	670	1,079	802	1,137

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended April 15, 1944, and comparison with corresponding week of 1943 and 5-year median—Con.

Division and State	Whooping cough			Week ended Apr. 15, 1944								
	Week ended—		Median 1939–43	Anthrax	Dysentery			Encephalitis, infectious	Leprosy	Rocky Mt. spotted fever	Tularemia	Typhus fever
	Apr. 15, 1944	Apr. 17, 1943			Amebic	Bacillary	Unspecified					
NEW ENGLAND												
Maine	0	44	43	0	0	0	0	0	0	0	0	0
New Hampshire	0	0	4	0	0	0	0	0	0	0	0	0
Vermont	15	15	28	0	0	0	0	0	0	0	0	0
Massachusetts	101	127	175	0	0	0	0	0	0	0	0	0
Rhode Island	2	52	26	0	0	0	0	0	0	0	0	0
Connecticut	36	31	40	0	0	0	0	0	0	0	0	0
MIDDLE ATLANTIC												
New York	94	346	430	0	0	17	0	1	0	0	0	0
New Jersey	32	186	186	0	0	0	0	0	0	0	0	0
Pennsylvania	71	246	308	0	2	0	0	1	0	0	0	0
EAST NORTH CENTRAL												
Ohio	45	191	187	0	0	0	0	2	0	0	0	0
Indiana	13	73	57	0	0	0	2	0	0	0	0	0
Illinois	34	150	150	0	2	11	0	1	0	0	0	0
Michigan [3]	42	255	149	0	0	3	0	0	0	0	0	0
Wisconsin	65	213	168	0	0	0	0	0	0	0	0	0
WEST NORTH CENTRAL												
Minnesota	10	87	49	0	2	1	0	0	0	0	0	0
Iowa	20	17	17	0	0	0	0	0	0	0	0	0
Missouri	11	51	25	0	0	0	0	0	0	0	0	0
North Dakota	7	2	12	0	0	0	0	0	0	0	0	0
South Dakota	1	2	2	0	0	0	0	0	0	0	0	0
Nebraska	19	9	9	0	0	0	0	0	0	0	0	0
Kansas	28	94	63	0	0	0	0	0	0	0	0	0
SOUTH ATLANTIC												
Delaware	0	1	4	0	0	0	0	0	0	0	0	0
Maryland [2]	37	105	64	0	0	0	0	2	0	0	0	0
District of Columbia	3	28	19	0	0	0	0	0	0	0	0	0
Virginia	48	125	56	0	0	0	28	0	0	1	0	0
West Virginia	39	54	49	0	0	0	0	0	0	0	0	0
North Carolina	105	152	152	0	0	0	0	0	0	0	1	0
South Carolina	67	30	82	0	0	5	0	0	0	0	0	0
Georgia	12	38	32	0	2	1	0	0	0	0	5	8
Florida	25	17	17	0	2	1	0	1	0	0	0	2
EAST SOUTH CENTRAL												
Kentucky	28	42	42	0	0	0	0	0	0	0	0	0
Tennessee	29	79	48	0	0	0	0	1	0	0	0	0
Alabama	18	80	48	0	0	0	0	0	0	0	1	3
Mississippi [2]	----	----	----	0	0	0	0	0	0	0	1	3
WEST SOUTH CENTRAL												
Arkansas	11	25	24	0	1	1	0	0	0	0	2	0
Louisiana	1	18	11	0	1	0	0	0	0	0	1	3
Oklahoma	1	33	20	0	0	0	0	1	0	0	0	0
Texas	213	690	337	0	9	233	[5]0	0	0	0	0	22
MOUNTAIN												
Montana	4	13	12	0	0	0	0	0	0	0	0	0
Idaho	2	12	12	0	0	0	0	0	0	0	0	0
Wyoming	12	1	3	0	0	0	0	1	0	0	0	0
Colorado	39	8	46	0	0	0	0	0	0	0	0	0
New Mexico	7	19	29	0	0	0	0	0	0	0	0	0
Arizona	26	18	24	0	0	0	32	0	0	0	0	0
Utah [2]	33	75	69	0	1	0	0	0	0	0	0	0
Nevada	13	3	3	0	0	0	0	0	0	0	0	0
PACIFIC												
Washington	51	43	50	0	0	0	0	0	0	0	0	0
Oregon	18	18	19	0	0	0	0	0	0	0	0	0
California	88	410	309	0	0	4	0	0	0	0	0	0
Total	1,576	4,328	3,645	0	22	277	62	12	0	1	11	41
15 weeks	27,196	60,208	60,208	16	394	3,087	958	151	9	5	150	569
15 weeks, 1943	----	----	----	23	441	2,943	670	166	7	9	258	715

[1] New York City only.
[2] Period ended earlier than Saturday.
[3] Exclusive of delayed reports (included in cumulative totals only), Arkansas, current week, 18 cases; corresponding week last year, 15 cases.
[4] Including paratyphoid fever cases reported separately as follows: Louisiana, 1; New Mexico, 1.
[5] A water-borne outbreak of dysentery, with approximately 500 cases, was reported as occurring on Mar. 18 at Bay City, Texas.

WEEKLY REPORTS FROM CITIES

City reports for week ended April 1, 1944

This table lists the reports from 85 cities of more than 10,000 population distributed throughout the United States, and represents a cross section of the current urban incidence of the diseases included in the table.

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
NEW ENGLAND												
Maine:												
Portland	0	0	------	0	29	0	1	0	9	0	0	0
New Hampshire:												
Concord	0	0	------	0	3	0	0	0	0	0	0	0
Vermont:												
Barre	0	0	------	0	0	0	0	0	0	0	0	0
Massachusetts:												
Boston	2	0	------	2	177	10	19	0	97	0	0	7
Fall River	0	0	------	0	42	1	3	0	1	0	0	3
Springfield	0	0	------	0	36	1	1	0	34	0	0	3
Worcester	0	0	------	0	4	0	10	0	56	0	0	4
Rhode Island:												
Providence	0	0	------	0	175	2	9	0	5	0	0	5
Connecticut:												
Bridgeport	0	0	------	0	24	0	0	0	8	0	0	1
Hartford	1	0	------	0	10	1	1	0	18	0	0	1
New Haven	0	0	------	0	117	2	2	0	1	0	0	3
MIDDLE ATLANTIC												
New York:												
Buffalo	0	0	------	2	3	2	5	0	34	0	0	2
New York	12	0	6	0	1,925	39	83	0	358	0	2	28
Rochester	0	0	------	0	5	4	6	0	7	0	0	2
Syracuse	0	0	------	0	6	1	4	0	8	0	0	2
New Jersey:												
Camden	0	0	1	1	11	1	3	0	99	0	0	0
Newark	0	0	------	0	184	4	4	0	29	0	0	4
Trenton	0	0	------	0	10	1	1	0	6	0	0	1
Pennsylvania:												
Philadelphia	8	0	5	7	48	22	43	0	128	0	0	14
Pittsburgh	1	0	1	1	53	4	20	0	34	0	0	2
Reading	0	0	------	0	3	0	6	0	1	0	0	0
EAST NORTH CENTRAL												
Ohio:												
Cleveland	0	0	2	0	493	7	20	0	114	0	1	11
Columbus	0	0	1	1	106	0	2	0	9	0	0	8
Indiana:												
Fort Wayne	1	0	------	1	2	0	5	0	6	0	0	0
Indianapolis	2	0	------	1	83	4	6	0	82	0	0	5
South Bend	0	0	------	0	2	0	0	0	4	0	0	0
Terre Haute	0	0	------	0	0	0	3	0	4	0	0	0
Illinois:												
Chicago	3	0	------	0	123	18	19	0	207	0	1	26
Springfield	0	0	------	0	64	0	5	0	5	0	0	1
Michigan:												
Detroit	3	0	5	1	107	14	13	0	147	0	0	18
Flint	0	0	------	0	20	2	3	0	5	0	0	1
Grand Rapids	0	0	------	0	108	1	4	0	6	0	0	0
Wisconsin:												
Kenosha	0	0	------	0	45	1	0	0	2	0	0	0
Milwaukee	1	0	2	2	117	4	2	0	85	0	0	16
Racine	0	0	------	0	15	0	2	0	4	0	0	11
Superior	0	0	------	0	5	0	0	0	34	0	0	1
WEST NORTH CENTRAL												
Minnesota:												
Duluth			------	0	38	1	1	0	14	0	0	3
Minneapolis	0	0	------	0	443	1	8	0	58	0	0	7
St. Paul	4	0	------	0	662	3	6	0	39	0	0	2
Missouri:	0	0										
Kansas City			------	0	108	3	7	0	53	0	0	2
St. Joseph	0	0	------	0	1	0	0	0	3	0	0	0
St. Louis	0	0	3	0	174	18	9	0	45	0	0	2
Nebraska:												
Omaha	0	0	------	0	28	1	6	0	39	0	0	0
Kansas:	1	0										
Topeka			------	0	55	0	4	0	3	0	0	1
Wichita	0	0	------	0	92	0	1	0	7	0	0	0

City reports for week ended April 1, 1944—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
SOUTH ATLANTIC												
Delaware:												
Wilmington	1	0	------	0	2	2	3	0	1	0	0	0
Maryland:												
Baltimore	1	0	1	0	878	3	11	0	97	0	0	21
Cumberland	0	0	------	0	1	0	1	0	0	0	0	0
Frederick	0	0	------	0	1	0	0	0	3	0	0	0
District of Columbia:												
Washington	2	0	1	0	125	5	12	0	159	0	0	2
Virginia:												
Lynchburg	0	0	------	0	1	1	0	0	0	0	0	0
Richmond	0	0	1	0	197	1	2	0	2	0	3	0
Roanoke	0	0	------	0	51	0	1	0	1	0	0	0
West Virginia:												
Charleston	0	0	------	0	4	0	0	0	29	0	0	0
Wheeling	0	0	1	0	18	1	1	0	26	0	0	3
North Carolina:												
Winston-Salem	0	0	------	0	46	0	0	0	0	0	0	0
South Carolina:												
Charleston	0	0	3	0	28	1	1	0	0	0	0	0
Georgia:												
Atlanta	1	0	8	0	86	0	1	0	5	0	0	0
Brunswick	0	0	1	0	3	0	3	0	0	0	0	0
Florida:												
Tampa	0	0	5	0	9	0	1	0	1	0	0	1
EAST SOUTH CENTRAL												
Tennessee:												
Memphis	0	0	1	0	12	1	5	0	17	0	0	2
Nashville	0	0	------	1	14	1	5	0	5	0	0	1
Alabama:												
Birmingham	0	0	4	2	16	0	7	0	3	0	0	0
Mobile	1	0	------	1	3	0	1	0	1	0	0	0
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock	0	0	------	1	30	0	1	0	1	0	0	0
Louisiana:												
New Orleans	0	0	5	0	36	1	8	0	10	0	1	0
Shreveport	0	0	------	0	0	0	5	0	0	0	0	0
Texas:												
Dallas	3	0	1	1	162	3	6	0	4	0	0	3
Galveston	0	0	------	0	6	1	5	0	0	0	0	0
Houston	2	0	------	0	30	1	3	0	0	0	0	0
San Antonio	1	0	3	1	24	2	8	0	1	0	1	0
MOUNTAIN												
Montana:												
Billings	0	0	------	0	9	1	1	0	3	0	0	0
Great Falls	0	0	------	0	0	0	1	0	0	0	0	0
Helena	0	0	------	0	0	0	0	0	0	0	0	0
Missoula	0	0	------	0	11	0	1	0	1	0	0	0
Idaho:												
Boise	0	0	------	0	2	0	0	0	2	0	0	0
Colorado:												
Denver	2	0	6	0	118	9	2	0	18	0	0	13
Pueblo	0	0	------	0	32	0	1	0	6	0	0	2
Utah:												
Salt Lake City	0	0	------	0	6	0	3	0	28	0	0	1
PACIFIC												
Washington:												
Seattle	1	0	0	0	181	4	7	1	233	0	0	36
Spokane	0	0	2	2	43	2	1	0	27	0	0	0
Tacoma	1	0	------	0	0	0	1	0	61	0	1	1
California:												
Los Angeles	4	0	19	2	325	3	8	1	30	0	0	9
Sacramento	0	0	1	0	27	0	3	0	2	0	0	6
San Francisco	1	0	10	1	91	1	6	0	41	0	0	6
Total	60	0	99	31	8,384	216	473	2	2,726	0	10	304
Corresponding week, 1943	68	1	142	40	7,343	207	529	3	1,617	0	14	1,192
Average, 1939–43	74	------	383	[1] 41	[2] 5,671	------	[1] 493	------	1,516	6	17	1,083

[1] 3-year average, 1941–43.
[2] 5-year median.

Dysentery, amebic.—Cases: Boston, 1; Philadelphia, 2; Chicago, 1; Dallas, 1; San Francisco, 1.
Dysentery, bacillary.—Cases: Worcester, 8; Richmond, 1; Charleston, S. C., 3; Los Angeles, 3.
Dysentery, unspecified.—Cases: San Antonio, 4.
Leprosy.—Cases: Chicago, 1.
Typhus fever, endemic.—Cases: Los Angeles, 1.

Rates (annual basis) per 100,000 population, by geographic groups, for the 85 cities in the preceding table (estimated population, 1942, 34,063,200)

	Diphtheria case rates	Encephalitis, infectious, case rates	Influenza		Measles case rates	Meningitis, meningococcus, case rates	Pneumonia death rates	Poliomyelitis case rates	Scarlet fever case rates	Smallpox case rates	Typhoid and paratyphoid fever case rates	Whooping cough case rates
			Case rates	Death rates								
New England	7.5	0.0	0.0	5.0	1,537	42.4	114.6	0.0	571	0.0	0.0	67
Middle Atlantic	9.4	0.0	5.8	4.9	1,005	34.4	78.3	0.0	315	0.0	0.9	25
East North Central	6.2	0.0	6.2	3.7	799	31.6	52.0	0.0	442	0.0	1.2	61
West North Central	9.9	0.0	5.9	0.0	3,175	53.5	83.3	0.0	518	0.0	0.0	34
South Atlantic	9.0	0.0	37.8	0.0	2,612	25.2	66.7	0.0	584	0.0	5.4	49
East South Central	6.0	0.0	29.8	23.8	268	11.9	107.2	0.0	155	0.0	0.0	18
West South Central	17.6	0.0	26.5	8.8	847	23.5	105.9	0.0	47	0.0	5.9	9
Mountain	16.1	0.0	48.4	0.0	1,435	80.6	72.6	0.0	468	0.0	0.0	129
Pacific	12.3	0.0	56.1	8.8	1,169	17.5	45.6	3.5	690	0.0	1.8	102
Total	9.2	0.0	15.2	4.8	1,287	33.2	72.6	0.3	418	0.0	1.5	47

TERRITORIES AND POSSESSIONS

Panama Canal Zone

Notifiable diseases—February 1944.—During the month of February 1944, certain notifiable diseases were reported in the Panama Canal Zone and terminal cities as follows:

Disease	Panama		Colon		Canal Zone		Outside the Zone and terminal cities		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Chickenpox	7		2		6				15	
Diphtheria	8						3		11	
Dysentery (amebic)					2		7		9	
Dysentery (bacillary)	1				4	1	3		8	1
Malaria [1]	7		3		87		32	4	129	4
Measles	2				142		1		145	
Mumps	10		8		46		3		67	
Paratyphoid fever	1				2		1		[2] 4	
Pneumonia		12		4	42	3		1	[2] 42	20
Scarlet fever							1		1	
Tuberculosis		19		1	6	3		3	6	26
Typhoid fever					1				1	

[1] 39 recurrent cases.
[2] Reported in the Canal Zone only.

Puerto Rico

Notifiable diseases—4 weeks ended January 29, 1944, and February 26, 1944.—During the 4 weeks ended January 29, 1944, and February 26, 1944, cases of certain notifiable diseases were reported in Puerto Rico as follows:

Disease	4 weeks ended—		Disease	4 weeks ended—	
	Jan. 29, 1944[1]	Feb. 26, 1944		Jan. 29, 1944[1]	Feb. 26, 1944
	Cases	Cases		Cases	Cases
Chickenpox	11	23	Mumps	2	
Diphtheria	31	39	Ophthalmia neonatorum	5	
Dysentery	12	24	Pellagra	1	
Erysipelas	2		Poliomyelitis		2
Filariasis	1	4	Scarlet fever	2	
German measles	8	24	Syphilis	551	841
Gonorrhea	510	682	Tetanus	8	6
Influenza	316	879	Tetanus, infantile	1	
Leprosy		3	Tuberculosis (all forms)	272	748
Lymphogranuloma inguinale	3	5	Typhoid fever	7	14
Malaria	305	1,153	Typhus fever, endemic	3	8
Measles	4	7	Whooping cough	42	131

[1] No report was received for the week ended Jan. 15, 1944.

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended March 18, 1944.—During the week ended March 18, 1944, cases of certain communicable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Chickenpox		7		241	434	61	44	102	106	995
Diphtheria		10	5	18	4	4			1	42
Dysentery (bacillary)									2	2
German measles		10		107	69	20	66	14	31	317
Influenza	1	14			55	4			9	83
Measles		76	2	1,025	643	198	64	222	25	2,255
Meningitis, meningococcus				3	4		2			9
Mumps	2	13		190	288	79	18	49	44	683
Poliomyelitis									1	1
Scarlet fever		15	6	108	272	95	18	109	96	719
Tuberculosis (all forms)			4	112	48	12	9	5	37	227
Typhoid and paratyphoid fever				29						29
Undulant fever					2			1		3
Whooping cough		19		93	57	7	18	9	22	225

REPORTS OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER RECEIVED DURING THE CURRENT WEEK

NOTE.—Except in cases of unusual incidence, only those places are included which had not previously reported any of the above-mentioned diseases, except yellow fever, during the current year. All reports of yellow fever are published currently.

A table showing the accumulated figures for these diseases for the year to date is published in the PUBLIC HEALTH REPORTS for the last Friday in each month.

(Few reports are available from the invaded countries of Europe and other nations in war zones.)

Plague

British East Africa—Uganda.—During the week ended March 4, 1944, 1 case of plague with 1 death was reported in Uganda, British East Africa.

Egypt—Ismailiya.—Up to April 1, 1944, 38 cases of plague with 21 deaths have been reported in Ismailiya District, Egypt.

Indochina.—For the period March 1–10, 1944, 3 cases of plague were reported in Indochina.

Morocco (French).—For the month of February 1944, 5 cases of plague were reported in Casablanca region, French Morocco.

Smallpox

India.—Smallpox has been reported in India as follows: Bombay—week ended March 11, 1944, 280 cases, 90 deaths; Calcutta—week ended March 18, 1944, 294 deaths as compared with 240 deaths reported for the preceding week.

Mexico.—For the month of February 1944, 429 cases of smallpox with 100 deaths were reported in Mexico. The States reporting the highest numbers of cases and deaths were as follows: Coahuila, 91 cases, 13 deaths; Durango, 26 cases, 2 deaths; Mexico, 28 cases, 1 death; Nueva Leon, 45 cases, 2 deaths; Oaxaca, 30 cases, 23 deaths; Vera Cruz, 114 cases, 3 deaths.

Morocco (French).—For the month of February 1944, 138 cases of smallpox were reported in French Morocco.

Typhus Fever

Chile.—For the period January 2–29, 1944, 44 cases of typhus fever with 7 deaths were reported in Chile, including 11 cases reported in Antofagasta Province, 15 cases with 3 deaths reported in Santiago Province, and 6 cases reported in Valparaiso Province.

Ecuador.—During the month of February 1944, 23 cases of typhus fever with 2 deaths were reported in Quito, Ecuador.

Mexico.—During the month of February 1944, 247 cases of typhus fever with 31 deaths were reported in Mexico. States reporting the highest incidence are as follows: Guanajuato, 13 cases, 4 deaths; Mexico, D. F., 116 cases, 9 deaths; Mexico State, 19 cases, 1 death; Puebla, 24 cases, 1 death; Queretaro, 11 cases, 2 deaths; San Luis Potosi, 6 deaths; Vera Cruz, 10 cases; Zacatecas, 11 cases, 1 death.

Morocco (French).—During the month of February 1944, 303 cases of typhus fever were reported in French Morocco.

Rumania.—For the period March 24–31, 1944, 138 cases of typhus fever were reported in Rumania.

Slovakia.—For the period March 4–18, 1944, 44 cases of typhus fever were reported in Slovakia.

Spain.—During the week ended March 4, 1944, 21 cases of typhus fever were reported in Spain.

Yellow Fever

Brazil—Acre Territory—Seabra.—On January 14, 1944, 1 death from yellow fever occurred in Seabra, Acre Territory, Brazil.

COURT DECISION ON PUBLIC HEALTH

Premarital examination law—applicable to common law marriages.—(Pennsylvania Superior Court; *Fisher* v. *Sweet & McClain et al.*, 35 A.2d 756; decided January 27, 1944.) This case was a proceeding under the Workmen's Compensation Act of Pennsylvania and presented the question as to whether there had been a common law marriage. After passing on this the superior court of the State went on to say that, while not actually raised or involved in the case, the record led it to believe that, in the light of the 1939 premarital examination statute, prior lower court rulings that State statutes providing for the issuance of marriage licenses did not apply to common law marriages should now be reconsidered. Notwithstanding certain phraseology used in the marriage license law, which had for its object the keeping of correct records of marriages within the State, it had been held in a number of lower court decisions that a license was not necessary for a common law marriage. But the superior court said that the 1939 act was a public health measure and should be construed so as to effectuate its purpose if at all possible. This law forbade, among other things, the issuance of any license to marry until the clerk of the orphans' court was in possession of a physician's statement that each applicant, within 30 days of the issuance of the marriage license, had submitted to an examination (including a standard serological test) to determine the existence or nonexistence of syphilis and that in his opinion the applicant was not infected with syphilis or, if so infected, was not in a stage of the disease which was likely to become communicable. This physician's statement had to be accompanied by a statement from the laboratory relative to the test.

The court described the statute as being clearly a public health measure designed to assist in the eradication of syphilis, to prevent the communication of syphilis by a diseased spouse to the other who was free of it, and to prevent the birth of children with syphilitic weaknesses or deformities. Certainly, said the court, the legislature never intended that such an important hygienic statute could be circumvented by the simple device of the parties entering into a common law marriage without first obtaining a license, after being examined by a physician and securing his statement of freedon from syphilis, etc., or by entering into such a marriage after a marriage license, pursuant to the statute, had been refused them. "We have no thought of attacking the validity of common law marriages. That is a matter for the legislature to handle. It is within our province, however, to hold that a valid common law marriage cannot

hereafter be entered into in this Commonwealth without first complying with the act of 1939 and securing a marriage license pursuant to its provisions."

The court accordingly ruled that, hereafter, marriage licenses had to be obtained, pursuant to the existing marriage license statutes, including the 1939 act, before any valid marriage, ceremonial or common law, could be entered into.

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